VROA 2019
Technical Rules

1. Races are open to all models of Pre-1948 American and Canadian closed cars. Original metal bodies only. Pickups, Station Wagons, Convertibles and Roadsters are not eligible.

2. *FRAME RULES*

1. The only legal frame accepted by the VROA will be the VROA tube frame. It must exactly follow the specifications outlined in the back of the book.
2. Entire frame must be 2" x 3" x .100" minimum wall thickness rectangular steel tube up to builder's choice, including mandatory cross-members. The 2" x 3" must be upright, but optional cross-members can be horizontal.
3. Because of manufacturers thickness tolerances, there will be a 10% undersize allowance in frame and roll cage thickness specifications.
4. Front and rear builder's choice must be 2" x 3" x .100" minimum thickness rectangular steel tube, including the cross members.
5. Cross members must be full width of frame and added to the end of builder's choice rails.
6. Optional cross member outside of main frame may be manufactured out of any type steel material with a minimum thickness of .090".
7. Builder's choice may be drilled to provide crush zone, but not cross members.
8. Mainframe rails may not be pierced, drilled or otherwise altered for the purpose of reducing weight. The only holes allowed are for component attachment only. Through holes must be sleeved.
9. Frame rails must be straight between front and rear builder's choice areas, as outlined in the back of the book. Frame rail must not be altered in anyway, within 12" of kick up.
10. Minimum ground clearance is 5.0" to bottom of 2"x 3" frame rails, including builder's choice, measured with the driver in the car. Car will be checked in race ready condition during a Pre and/or Post Race Event inspection.
11. Maximum offset on all cars to be measured from back of vertical rim bead to surface of frame rail (Measured with left front wheel perfectly parallel to frame). Difference in measurement from side to side may not exceed 3" and you must provide access to measure.
12. Cowl may be cut back to original hood line. The starting point of the top of the Firewall must be within 15" of rear of engine measured straight back from rear center of block. Firewall may not extend forward past front edge of front cowl, except for the foot box. Firewall must be made of sheet metal (min. 20 gauge), and it must completely separate driver from engine compartment**.**
13. Rear firewall must be 20 gauge metal and it must completely separate driver from gas tank compartment.
14. Floor must be closed in to the sides of the body from front to rear firewalls. May be done by installing sidewall liners up roll bars across to window frames. Right side of driver tunnel height must start 6" above top of transmission.
15. Cars must be properly painted, including frames and roll cages and numbered within two weeks from the original appearance at track, or after sustaining damage, and maintained in proper condition for the remainder of the year.

16. Car numbers must be minimum 12” high by 2” stroke width and must be on the side door panel. Roof numbers not required due to the use of transponders. Numbers must be a contrasting color to the rest of the car.
17. Minimum height from the ground to the highest point of the natural body is 54.5”, measured with the driver in the car.

3. *BODY RULES*

1. Bodies must be centered on frame rails. A tolerance of 1” is allowed.
2. No chopping of tops.
3. No sectioning of bodies. Trunk may be shortened and must retain the original contour.
4. No spoilers.
5. No wings.
6. No fenders, outside of body.
7. No air dams on nose of car.
8. Grills allowed, but no die cast grills.
9. Nothing in front of radiator except grill and air scoop to move air into radiator. Air scoop must not extend past front crash guard and be no wider than outside of frame where mounted.
10. No side or rear windows to be enclosed with anything, fully or partially.
11. Left side window opening may be cut and hinged for easier entry/exit, but must appear as per original dimension when closed. All other window openings must appear as per original dimensions.
12. Louvers allowed on hood and side panels only, forward of front firewall.
13. Body sides flat and solidly attached and must extend to bottom of frame rails.
14. Body must be minimum 4” off ground with driver in the car everywhere including maximum 3” high and 3” wide body extensions. Front scoop metal must be minimum 3” off ground.
15. Maximum ¼” air gap allowed on hood and trunk lid.
16. Maximum rake (body angle) to be 6 degrees. Measured on side window with frame rails level (0 degrees).
17. Rear end of body must follow contour of body until it ends**.** This means either 1) the original contour to the point where the body was cut off or 2) the original contour the car had to the end (tail) of the body. No upward curved spoilers may be added to the end (tail) of the body. Rear end of body must extend down to meet rear frame rails. Rear end of body must be completely closed in with sheet metal. Rear deck filler panel must be 90 degrees to the frame rail and must be completely closed in from body to cross-member and from body side panels (no holes). If a hinged panel is used in the rear for access to the trunk area, the panel must be fastened when car is on the track.
18. All body panels, including roof inserts, must be made of sheet metal and must be minimum 20 gauge thickness. Roof hatches are allowed, but they must be hinged in the front, and be able to be opened from inside and outside of car.
19. All cars must be equipped with a metal hood securely fastened. The hood must extend from outer edges of cowl and radiator. Hood or nose piece must cover radiator.
20. Hood scoop can be full length of hood. Pre-made plastic or carbon fiber is allowed. Maximum 18” diameter air cleaner. Scoop cannot be any wider than 2” on either side of air cleaner, and cannot be any higher than 1” above air cleaner. Scoop must not have flaring to direct air over roof. Hood scoop must not impair driver’s vision.

21. A clear polycarbonate windshield is mandatory from top to bottom of windshield opening and be full width of windshield opening in front of driver. Clear Polycarbonate must be at least 1/8" thick. No window tints allowed. Window polycarbonate must be replaced every 3 years.
22. No mirrors of any kind will be permitted for use by veteran drivers. One 3" mirror mounted on the left pillar will be allowed for rookie drivers first year only.
23. All VROA members racing in VROA sanctioned events must display all club sponsor decals in order to receive points; points fund payout, and payout for the race event. If at all possible, decals must be displayed in the preferred designated area of the car as per the diagram attached to the rule book. If it is not possible to display the decals in the preferred area, they must be displayed on both sides of the car in a visible location.

4. *WEIGHT RULES*

1. Minimum weight of car and driver after any race shall not be less than 2300 lbs. Left side weight shall not exceed 60% of total weight. Weighed with the driver in the car. **No adding of fuel before weighing.**
2. Ballast weight must be directly and securely attached to the sides or top of the main frame rail or major cross member structure, not the sub frame. All ballast must be inside of body panels. No lead shot or liquid type ballast permitted. All ballast weights must be painted white, with car number painted in red or black. Any car losing ballast on track will be disqualified.

5. ROLL BARS, CRASH GUARDS AND SEAT

1. Minimum roll cage requirements are as per attached drawings in the back of the book.
2. All bars in the roll cage must be minimum 1 ¾" outside diameter round tubing and must be .090" minimum wall thickness DOM tubing. Three left side door bars must be as per drawing. Three left side horizontal door bars to be angled outward from front to back. Right side must have three door bars as per drawing in back of book. Driver's helmet must be below bottom of all roof bars.
3. Because of manufacturers thickness tolerances, there will be a 10% undersize allowance in frame and roll cage thickness specifications.
4. Left side door bars must be plated with a minimum 1/8" thick plate, totaling 200 square inches. Plate must primarily protect driver's torso area.
5. "X" in between the frame rails must be made of 1 ½" minimum tubing, .090" wall thickness.
6. All 90 degree joints in main cage must have gussets. Triangulated joints may be exempted at tech committee's discretion. Gussets must be minimum 1 ½" x .090" thick.
7. Electric welding only on frame and roll cage. No angle iron allowed in driver's compartment. Shifter must be free of any obstruction.
8. Crash guards are mandatory front and rear. Front crash guard must be mounted a minimum of 3" ahead of front cross-member to provide a crush zone. Must be constructed of steel or aluminum tubing. No sharp corners or rough edges allowed.
9. Crash guards must be flat across. No bowed crash guards. Top and bottom bars must extend the same distance from the cross-member and must be parallel. Optional crash guard (NASCAR Modified type) allowed. No crash guards or nerf bars to be filled in with any type of panels.

10. Crash guards must be a minimum of 12” and a maximum of 14” from top to bottom. Center must be 16” from ground +/- 1” and must have at least one vertical bar.
11. Rear crash guards may extend to ½ of rear tire width but must be at least width of chassis at rear cross-member. All rookie drivers must have at least one bar on rear crash guard painted bright yellow. No other cars to have yellow crash guards.
12. Front crash guards to be no wider than chassis at front cross-member. Exception on four spring cars, crash guard may be as wide as outside of spring perch. Maximum distance from center of right king pin to the front of the front crash guard must not be more than 32”. Ends of both front and rear crash guards must be tied back into the chassis with steel, flat bar minimum 1” x 1/8”, or tubing with minimum 1/2" diameter x .040 wall with one end or both ends welded.
13. Nerf bars must not extend past outside edges of tires. Mandatory between front and rear wheels. Nerf bars not allowed in front of front wheels.
14. An approved racing seat must be securely fastened to the cage or frame at bottom and backrest. Seat must have a padded headrest. Aluminum seat is mandatory, .125” thickness. Seat must be mounted above 2” x 3” frame rail.
15. The seat must also have double head restraints (right & left), on each side of the driver’s seat.
16. All bars in potential contact with the driver’s body must be covered with fire retardant (made for racing roll bar) padding. If running a door liner on left side, sheet padding is recommended. Center of steering wheel must be padded.

6. STEERING, BRAKES AND STARTER

1. Any regular type steering box may be used but column must mount to the left of dash center. No center steering boxes. Power steering allowed. Rack and pinion is allowed. All steering parts must have 3” ground clearance. Welds on any steering parts must be properly reinforced.
2. Dual brake system is required. Four-wheel brakes must be in good working order. Any type brake system allowed. No power brakes.
3. Cars must be equipped with a self starter in working condition.

7. SUSPENSIONS

1. Maximum wheelbase is 118”
2. Number of springs and suspension mounting styles: Either two transverse springs or four parallel springs only. No combinations allowed.
3. No auxiliary suspension of any kind allowed. (1/4 springs, coils etc.)
4. No independent suspensions.
5. No onboard driver controlled suspension or weight adjustments allowed.
6. Only one welded steel body shock per wheel (Non rebuild-able, re-valve-able, or take apart)
7. Load bolts and sway bars may be used.
8. No slider springs allowed (Either end or center). Permanent vertical adjustable spring mounts are allowed. No horizontal mount allowed. Birdcages are allowed.
9. Adjustable spring shackles allowed. As per diagram in back of book.
10. Load adjusting shackle brackets as per drawings only.

11. All springs will have standard or bolted eyes on both ends of the spring. Leaf springs must be mounted to VROA 2"x 3" tube frame cross-members or optional cross member tube only, not to sub frames.
12. Leaf springs to be made of steel. No welding on leaf springs allowed.
13. Dropped, straight axles only. No twin I-beams. Aftermarket axles allowed. Only 3 axles are approved at this time. Must be 54" maximum king pin to king pin center with 4" drop. ½" tolerance on drop for adjustment. Drop measured from top of king pin boss to top of 2" O.D. axle tube. Tubing for axles to be steel 2" O.D. with 3/16" or .188-wall minimum thickness. Seamless tube recommended. No square tube axles allowed.
    i. Front axle spindle mount. Replace spindle plate with rod ends and kingpin. Can use Ford or Chevy ball joints in lieu of kingpins. Rod ends must be steel and no less than 20,000 radial load. Threads and eye no less than ¾" and body no less than 1.750. Nuts must be fully engaged. Kingpin bolt must be grade 8 or higher with lock pin at nut. NO NYLOCKS. Kingpin bolt must be captured by spindle. Castor adjustment must have locks Front & Rear. Gusset must be within ¼" of Heim nut and be minimum 3/16" thick. 4" drop according to approved VROA rule.
14. Spring pocket under driver's seat to be covered by 1/8" plate.
15. Four Spring cars: can mount the front axle above or below the leaf spring.
16. The axle that uses the bolt on stubs that the king pins are inserted into must be made from 2" round tubing and must be inserted into a hole drilled into the plate and welded on both sides. They must not be butt welded to the plate. Must have tethers! Aluminum mounting plated must be nut and bolt combination.

8. FUEL SYSTEM AND FUEL

1. Fuel cell mandatory. All cells must have an approved vent with a check valve.
2. Cell must be mounted behind rear firewall and inside perimeter of frame rails. Safety bars must be mounted below and behind the fuel cell. Must have a minimum of 1" clearance from fuel cell to the safety bars. Safety bars need to be 1.50" minimum with wall thickness of .080. If fuel cell is mounted below rear frame rail.
3. Cell cap must be clearly visible and easily accessible to crew members and Tech officials.
4. Cell must be completely enclosed in a metal container and securely fastened. Safely and properly protected. Cell cap must be tethered.
5. All fuel lines must run under the floor pan of the car and be properly secured. Braided or solid gas lines recommended. No copper lines
6. Only metal fuel filters allowed.
7. Fuel- Gasoline only.
8. Only braided or solid fuel lines, connected by threaded ends, allowed from the fuel pump to the carburetor except for a 4" max of neoprene for connections.

9. CARBURATION AND EXHAUST

1. Any cast iron or cast aluminum intake manifold that is un-altered on the outside with the exception of modifying the base will be allowed. Original two barrel manifolds can be used.

2. Any Holley Type appearing two-barrel carburetor allowed. All carburetors must have two throttle return springs. All cars must be equipped with an intake air filter or flame arrestor. All gas pedals must have toe hook. No braided cable gas peddles.
3. No supercharging or injecting devices allowed.
4. No electric fuel pumps. No pumps with glass bowls.
   Exhaust systems:
5. Top of any outlet must not be more than 18" from ground.
6. Mufflers mandatory. (Db level cannot be over 100 decibels)
7. The exhaust on the right hand side has to be dispensed away from the driver with turn outs. The left hand side must go back equal to the driver and turn out. Anything underneath must be equal to or past the driver with down spout.

10. IGNITION

1. Battery must be securely fastened in engine or trunk compartment only. Battery cables must be properly secured.
2. Any ignition system allowed except Magneto's.
3. Ignition kill switch must be mounted in the center of the dash and must be clearly marked. Off must be in or down.
4. Master battery disconnect must be mounted where visible. Within reach of the driver and safety crew.

11. ENGINE

1. Inline six cylinder and V8 spec overhead valve engines allowed. Cast iron blocks and heads only.
2. Maximum displacement for inline six cylinders is 255 cubic inches, including clearance and wear.
3. Different makes of OEM engines to a different make of OEM transmission will be allowed.
4. Engine location: Maximum allowable distance for setback of engine is measured from center line of king pin measured back to the number one spark plug and is 13". Maximum allowable distance down to center of crankshaft from a line across the top of the frame at the crankshaft bolt is 5". Engine must mount vertically within 10 degrees of OEM position. Chrysler to be in OEM position. Maximum offset from center is 2".
5. The only engines allowed are listed below with their respective crank strokes.
   i. Chevrolet 230 cu in 3.250" stroke
   ii. Chevrolet 250 cu in 3.531" stroke
   iii. Ford 240 cu in 3.180" stroke
   iv. Ford 250 cu in 3.910" stroke
   v. Chrysler 225 cu in 4.125" stroke
   vi. AMC 232 cu in 3.500" stroke
   vii. AMC 243 cu in 3.410" stroke
   viii. Chrysler 4.0/242 engine with 3.406 stroke.

   A. Only production crankshafts for make and model of engine being used are allowed. No aftermarket crankshafts at all, no custom forged or billet crankshafts. Only original stroke allowed as listed above, no stroke changes at all. All dimensions must be + or - .005" tolerance.

   B. Any type of piston allowed.

C. Any camshaft allowed except roller cams and roller lifters. No overhead cams allowed. (No Mushroom style lifters allowed)

8. Dry Sump oil system allowed. Tank must be outside drivers compartment. Hoses must be braided or 350 PSI rating minimum. Ends must be AN style. A remote filter is allowed. Approved pressurized surge tank is allowed (Moroso Style) must be securely mounted. Shield between driver and tank with valve sticking through is required.
9. Use of oil coolers will be allowed.

10. The only V8 engines allowed are listed below. With respective stroke.
    i. Chevrolet 305 cu in 3.480
    ii. Ford 302 cu in 3.000
    iii. Chrysler 318 cu in 3.313

A. Chevy – Any 305 head with minimum 55cc chamber, maximum valve size intake 1.84, exhaust 1.5. Heads with 1.72 intake valve can be cut to a 1.84 valve. New casting part number ZG237-N will be allowed.
B. Ford – Any 302 head with minimum 54cc chamber, maximum valve size intake 1.84, exhaust 1.541. Small valve 302 heads may be cut for 1.84 valve. GT40P heads will be allowed.
C. Chrysler – Any early style (no magnum heads) 318 head up to 1989, minimum 57cc chamber, maximum valve size intake 1.88, exhaust 1.5. Small valve 318 heads may be cut for 1.88 valve.
D. All Heads. Milling of deck surface for clean up only, no angle milling or milling for compression. Head thickness will be checked. No removal of metal from intake or exhaust ports for any reason. Valve seat limited to 3 angles, valves 1 angle, no undercut stems or polishing. Screw in rocker studs will be allowed. No stud girdles. Roller rockers will be allowed, must be factory ratio and marked on rocker. Pushrods 5/16 diameter and wall thickness open.
E. Crankshaft – Metal removal from rotating assembly for balancing only. Stock or stock type aftermarket will be allowed. Contact engine techs for legal part numbers.
F. Connecting Rods – Any stock rod will be allowed, as well as ARP bolts or stock type aftermarket rod. Contact engine techs for legal part numbers.
G. Pistons – See below for legal part numbers. Maximum oversize .030.
    1. Chevy part numbers Silvolite 1449 or Federal Mogul 454NP
    2. Ford part numbers Silvolite 1157 or Federal Mogul 272AP
    3. Chrysler part number Silvolite 1278
H. Balancers – Stock or stock type aftermarket. No lightweight balancers.
I. Camshafts – See below for legal part numbers. Must use hydraulic lifters.
    1. Chevy
        i. MC1730 or CS1014R
        ii. MC1988 or CS1013R
    2. Ford
        i. MC24211
        ii. MC2292
        iii. MC24212
        If you would like alternates in Comp Cam contact engine techs.
    3. Chrysler
        i. 20-221-3

ii. 20-222-3

J. Timing Chain Sets – Will allow 3 key way crank gear for cam degreeing only.
K. Intake Manifold – Stock 4bbl or Edelbrock performer.
L. Will allow aftermarket head bolts and main bolts.
M. Ignition – Any stock ignition or stock type aftermarket. MSD rev limiter will be required.
   i. MSD Rev Limiter Box part number 8728 with a MAX 5700 Rev chip must be used, all wires for rev box must be left exposed for tracing purposes. MSD 8728 must be mounted under the hood accessible to tech inspectors.
N. Engine location to be 39" max from the center line of the front axle to the back of the block where the bell housing mounts.
O. Exhaust – Headers are allowed, No – 180 Degree ("CROSSOVER") or Tri-y Style ("IRON LUNG") headers allowed
P. Minimum weight, car and driver 2,425lbs after feature, no top ups. Weight percentages same as inline 6 Rule.
Q. Crank height same as inline 6.
R. Engine offset same as inline 6.
S. Carburetor
   i. Stock Holley 500 cfm model #'s 0-4412C and 0-4412CT. No modifications allowed accept remove of choke plate and related linkage. Must use stock metering block Part #134-137 with stamped #5952-3 2.
   ii. Jets and Accelerator pump may be changed.
   iii. Power valve may be changed and allow vent tube.
   iv. No HLY-4412HP Carburetors allowed.
   v. One (only) aluminum carburetor adapter.
T. Fuel Systems and Fuel
   i. Stock style fuel pump only
   ii. Pump gas only, 94 Octane max

12. CLUTCH AND TRANSMISSION

1. Commercial aftermarket steel blowout proof bell housing mandatory. Bell housings can be modified but must be plated with ¼" steel so all openings are covered. Steel or Aluminum bell housing SFI approved no factory.
2. Stock flywheels allowed. Aluminum flywheels allowed. Automatic transmissions flex plates allowed.
3. Clutch must work and be foot operated. Any size or type of clutch allowed. No couplers.
4. Three or four speed aluminum or cast OEM allowed. Reverse must work. No transmissions with internal clutch. No overdrive units. No in and out boxes.
5. Automatic transmissions will be allowed.
6. The use of a different make of OEM transmission used with a different make of OEM engine will be allowed.

13. REAR END AND DRIVESHAFT

1. Any center section allowed with steel or aluminum axle tubes. Floating rear ends allowed.
2. Any make rear end allowed in any car.
3. All drive shafts must be constructed of steel or aluminum. All drive shafts must be painted white and numbered.

4. All cars must be equipped with a full 360-degree driveshaft loop 3” to 6” behind front u-joint. Must be made of 3/16” by 1 ½” plate or equivalent. Rear loop is highly recommended.
5. Locker type differentials can be used.
6. Quick change rear ends will be allowed.

14. TIRES AND WHEELS

1. All cars must use 5 lug wheels only.
2. All four wheels must be approved commercially manufactured steel racing wheels. No OEM wheels.
3. Minimum offset to wheel center from inner edge (Back Spacing) of wheel is 2”.
4. Maximum width for all wheels is 8”.
5. Tires must be used as per club specified.
   The tires are:
   1.) Hoosier D800 treaded tire
   2.) Treaded IMCA (Canadians Use)
6. Absolutely no tire soaking of any kind will be allowed.
7. Tires will be checked at races with a durometer to monitor and determine hardness. The minimum durometer reading will be set at 45.
8. No aluminum lug nuts.

15. COOLING SYSTEM

1. Any type radiator may be used providing it is not higher than the hood or wider than frame where mounted. Hood or nose piece must completely cover top of radiator.
2. Radiator must be fastened at front of car. Auxiliary coolers are permitted inside crash bars within center of wheelbase forward, but not within the driver’s compartment.
3. No antifreeze in cooling system.
4. Cars must have a catch or overflow can and this should be drained before each race. Can must be located forward of front firewall and cannot be vented anywhere behind front firewall. Steam from the vent must be visible to the driver.

16. MANDATORY SAFETY EQUIPMENT

1. Driver must have a helmet that is no less than 2010 Snell Foundation SA rated Helmets will be inspected and must have sticker.
2. Full face helmet is recommended.
3. Two or three inch wide made for racing seatbelts with double shoulder harnesses must be used. They must have a quick release. Grade 8 bolts recommended with locking nuts. Crotch strap required. No belts will be older than 5 years. Belts must have date.
4. S.F.I. approved P.B.I. or Nomex designed for racing fire suits are mandatory. No Proban fire suits. Suits must be in good shape and should be clean. Fireproof underwear and socks mandatory if single layer suit is used. Double layer suit is recommended. S.F.I. approved racing gloves and shoes are required. Hans type helmet restraints or neck collars are mandatory per track requirements.

5. Fire extinguishers are mandatory in the cars. Minimum 2 ½ lbs. Must be mounted safely. Must have gauge. Must be in drivers reach. Onboard systems accepted. If extinguisher gauge is empty or reads out of green zone car will not be permitted to run.
6. A Fire extinguisher is also required at each pit crew site. A minimum of a 5lb. fire extinguisher that is accessible at all times. (Preferable placement is at the rear of your trailer)
7. Driver's window nets are mandatory at drivers' head. Must hook at top and release closest and /or easiest for the driver to reach.
8. Becker Bar/Cable Must be at least 1" diameter x .090 wall tube with gussets. If bar is over 1" diameter x .090, wall gussets will not be needed. Existing cars may use a Minimum of a 1/4" cable wrapped around the cage tubing at both ends and secured with two cable clamps at both ends. Bar/Cable must be centered with the dash bar and attach perpendicular at the halo bar.

17. ***RULE MODIFICATION GUIDE***

There is a form available from the Technical Committee that must be filled out for all rule change requests. All of the requests will be reviewed by the technical committee. Any proposals **MUST** be filled out and submitted by the January meeting. Any proposals will be discussed at the meeting they are presented and any subsequent meetings until all concerns are addressed. All safety issues will be reviewed immediately.

(Rule request forms can be obtained when you want to add, change, or delete any rules. But this does not nullify your right to bring a proposal up at a meeting when it occurs to you at that time. Request forms are designed for your pre – thought and explanation of your subject matter for better presentation, and review by any committee that may have to review it.)

Infractions of the rules may be handled with weight penalties or disqualification based on the Technical Committees decision. The Executive Committee will handle any protests, of the ruling.

Anything not specifically covered in these rules is NOT considered legal. This book supersedes anything that was considered legal in the past. The Tech Committee will rule upon any interpretation and intent of these rules.